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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,040	12/11/2001	Ming-Chang Liu	80398.P467	6421

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EXAMINER

AN, SHAWN S

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 07/26/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/015,040

Applicant(s)

LIU ET AL.

Examiner

Shawn S An

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 9, 10, 12, 14-19, 21, 22, 24 and 26-28 is/are rejected.
- 7) ☒ Claim(s) 6, 8, 11, 13, 20, 23, 25 and 29 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claims 18 and 21 are objected to because of the following informalities: On claims 18 and 21, line 4, the claimed limitations "." after "second field" can't be used in the claim, unless the period is used at the end of the claim to indicate the particular claim is complete. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-3, 14-17, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Chang et al (6,735,253 B1).

Regarding claims 1, 17, and 26, Chang et al discloses a video device, a computer readable medium (col. 7, lines 53-59), and a method for determining a scene change in a video sequence, comprising:

an input (Fig. 7) configured to receive a first (reference or I), a second (P), and a third video frame (B); and

a processor (Fig. 1, 110) configured to determine a first set of motion vectors between the first video frame and the second video frame and a second set of motion

vectors using the third video frame (Fig. 2, elements 220, 230), and compare a ratio of the first and the second sets of motion vectors to a first threshold to determine whether a scene change has occurred (col. 8, lines 51-65).

Regarding claim 2, Chang et al discloses the first frame (I) preceding the second frame (P), wherein the second frame precedes the third frame (B) (Fig. 7).

Regarding claim 3, Chang et al discloses the third frame (B) preceding the first frame (I), wherein the second frame (P) precedes the first frame (I) (Fig. 7).

Regarding claim 14, Chang et al discloses a new GOP (Fig. 7) and a scene change (Fig. 2, 240).

Regarding claim 15, Chang et al discloses converting the I-frame to a P-frame and converting the P-frame to an I-frame (Fig. 10).

Regarding claim 16, it is considered an obvious design choice to heuristically determine the threshold value as long as the result or the outcome is favorable.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4-5, 7, 9-10, 12, 18-19, 21-22, 24, and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al (6,735,253 B1) in view of Linzer et al (6,108,039).

Regarding claims 4, 9, 18, 21, and 27, Chang et al discloses the first, the second, and the third frame, wherein the each frame comprises of two (top and bottom) fields (NTSC standard) (col. 1, lines 40-45).

Chang et al does not particularly discloses the first set of motion vectors comprising a first subset of motion vectors between the first field of first frame and the

first field of the second frame, and a second subset of motion vectors between the second field of first frame and the second field of the second frame; and

the second set of motion vectors comprising a first subset of motion vectors between the first field of first/second frame and the first field of the third frame, and a second subset of motion vectors between the second field of first/second frame and the second field of the third frame.

However, Linzer et al teaches the first set of motion vectors comprising a first subset of motion vectors between the first field of first frame and the first field of the second frame, and a second subset of motion vectors between the second field of first frame and the second field of the second frame; and

the second set of motion vectors comprising a first subset of motion vectors between the first field of second frame and the first field of the third frame, and a second subset of motion vectors between the second field of second frame and the second field of the third frame (Figs. 4-5).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a video device and a method for determining a scene change in a video sequence as taught by Chang et al to incorporate the teachings as above as taught by Linzer et al so as improve on the motion estimation technique, thereby reducing computational requirements without a substantial effect on picture quality, and providing optimal motion estimation.

Regarding claims 5, 7, 10, 12, 19, 22, 24, and 28, since Chang et al discloses comparing a ratio of the first and the second sets of motion vectors to a first threshold to determine whether a scene change has occurred in frames set, it would have been obvious to compare two ratio of the two subset (top and bottom) of the (first and second) sets of motion vectors, and determine whether a scene change has occurred between frames/fields (two fields converts to one frame), if the first and the second ratio are larger than the first threshold, since each frame comprises of two (top and bottom) fields (NTSC standard).

Allowable Subject Matter

6. Claims (6, 8, 11, 13), (20, 23, 25), and 29 are objected to as being dependent upon a rejected base claims 1, 17, and 26, respectively, but would be allowable: if either claim 6 or claim 8 or claim 11 or claim 13 is rewritten in independent form including all of the limitations of the base claim 1 and any intervening claims; and if either claim 20 or claim 23 or claim 25 is rewritten in independent form including all of the limitations of the base claim 17 and any intervening claims; and if claim 29 is rewritten in independent form including all of the limitations of the base claim 26 and any intervening claims.

Dependent claims 6, 8, 11, 13, 20, 23, 25, and 29, recite the novel features in which the art of records fail to anticipate or make obvious. Accordingly, if the amendments are made to the claims listed above, and if rejected claims are canceled, the application would be placed in condition for allowance.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) Eifrig et al (6,005,980), Motion estimation and compensation of VOPs for interlaced digital video.

B) Fukuhara et al (6,381,275 B1), Image coding apparatus and image decoding apparatus.

C) Dorricott (6,101,222), Scene change detection.

8. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to **Shawn S An** whose telephone number is 703-305-0099. The Examiner can normally be reached on Flex hours (10).

9. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SSA

Primary Patent Examiner

7/21/04